Abstract

DEMODULATION AND PHASE ESTIMATION OF TWO-DIMENSIONAL PATTERNS

A method (400) of estimating an orientation angle (β_0) of a pattern in an image (405) is described. A complex energy operator is applied to the image (405). The complex energy operator is defined as $\Psi_c\{f\} = (D\{f\})^2 - fD^2\{f\}$. A phase component of the result, which is defined as $2\beta_0 = \arg(\Psi_c\{f\})$ is determined, from which the orientation angle (β_0) is calculated. A method (100,200) of demodulating a real two-dimensional pattern is also described. A two-dimensional spiral phase filter is applied to the pattern. The result is combined with the original pattern to provide a demodulated image. Furthermore, a method (600) of estimating a spatial phase of fringe pattern images in a sequence of fringe patterns is disclosed. The fringe pattern images are converted to pure AMFM patterns by removing offsets from each. Contingent analytic images are determined corresponding to each of said AMFM patterns, from which phase differences and phase shifts are determined from dependent pairs. This allows for a spatial phase of the fringe pattern images to be estimated.